

Warrior Panel: Ebola and Marburg Virus Testing and Shipping Instructions

Contact your local Health Department Epidemiologist for all suspected Ebola and Marburg virus cases. The CDC MUST be consulted before specimens can be submitted to DCLS for testing.

I. TESTING SUMMARY: DCLS provides 24/7 courier and testing service for CDC-approved Patients Under Investigation (PUIs)

Testing Tier	Pathogen/Disease	Test Type	Specimen Type	Additional Comments
First (1st)	Ebola virus Marburg virus	Warrior Panel Multiplex RT-PCR	Whole Blood (EDTA)	<ul style="list-style-type: none"> Panel detects <i>Zaire, Sudan, Tai Forest, Reston</i>, and <i>Bundibugyo ebolavirus</i> Panels detects Marburg and Ravn viruses * Strain designation is not performed
Second (2nd)	Ebola virus Marburg virus	Warrior Panel Multiplex RT-PCR	Whole Blood (EDTA)	Performed when initial result is negative, and specimen was collected less than 72 hours from symptom onset
	Malaria	Real time multiplex PCR	Whole Blood (EDTA)	Test detects <i>Plasmodium falciparum, malariae, ovale</i> and <i>vivax</i> individually * Reflex testing performed if Ebola or Marburg result is negative
	Influenza/COVID-19	Real time multiplex PCR	NP or nasal swab in VTM	Test detects both Influenza and SARS-COV2 * Testing performed upon request only
Third (3rd)	Enteric pathogens	BioFire GI Panel	Stool in Cary Blair media	* Testing is provided as a last resort if testing cannot be performed at the Ebola Centers <u>AND</u> Ebola virus has been ruled out

II. RESULTS REPORTING: Ebola virus can be detected in blood only after onset of symptoms, most notably fever. It may take up to 3 days post-onset for detectable levels of virus. **Testing turnaround time is 2-3 hours.**

Reporting Language	Results	After Actions/Notifications
POSITIVE for Ebola virus RNA	1 or more Ebola virus strains detected	Forward specimen to the CDC for further testing
POSITIVE for Marburg virus RNA	Marburg and/or Ravn virus detected	
NEGATIVE for Ebola or Marburg virus RNA	None of the Ebola virus strains, Marburg and Ravn viruses were detected	<ul style="list-style-type: none"> No further testing if specimen is collected at least 72 hours after symptom onset Test new specimen collected 72 hours after symptom onset if first sample was collected less than 72 hours

Upon request, testing reports can be provided to the submitting hospital via fax on the next business day, if requested during verbal reporting of results and a secured fax number is provided.

III. SPECIMEN COLLECTION/SUBMISSION:

- **Ebola / Marburg / Malaria:** Collect 2 whole blood specimens using EDTA purple-top blood tubes (plastic only)
*** Do not centrifuge blood tubes**
- **Influenza/COVID-19:** Collect 1 NP or nasal swab specimen in viral transport media (VTM)
- **Enteric pathogens:** Collect raw stool and transfer to a Cary Blair vial, fill vial ½ to ¾ full only
 - **Store and ship all specimens at 4°C**
 - Submit a completed DCLS Test Request form with each specimen, providing all patient information, and medical history (**place completed form on the outside of the secondary specimen receptacle**)
 - Complete Shipper's Declaration Form with red border paper (**place 3 copies* in the plastic sleeve that is attached to the outermost insulated shipper**) ***Print 2 of 3 copies in color**

CONSIDERATIONS FOR SPECIMEN PACKAGING/TRANSPORT:

- Dept. of Transportation (DOT) requires "contracted" couriers ONLY transport Risk Group 4 specimen packages that are prepared by Category A certified individuals.
*** Please communicate to DCLS if your facility does not have staff certified to package and ship Category A specimens***
The DCLS courier cannot be deployed to retrieve a Risk Group 4 specimen that has not been packaged properly by a Category A certified shipper using defined DOT requirements:
- Category A packages must include DOT-approved labeling, packaging materials and shipper's declaration.
- DCLS provides Category A/Risk Group 4 shipping kits (See Section IV) to all area Health Districts and Ebola Centers for Ebola virus testing.
- DCLS can also provide a kit directly to a facility upon CDC testing approval for a PUI if a kit cannot be obtained from an area Health District.

IV. CATEGORY A/RISK GROUP 4 (RG4) KIT CONTENTS:

QTY:

- (2) Lavender-top EDTA plastic blood tubes
- (2) Biohazard bags w/absorbent material
- (2) Squares of parafilm to seal blood tubes
- (1) Secondary specimen receptacle
- (2) Cold packs (**Freeze prior to shipping**)
- (1) Ziplock plastic bag for documents
(**placed outside secondary container**)

QTY:

- (1) DCLS Ebola Virus Testing Instructions
- (3) DCLS Test Request Form
- (1) IATA pre-labeled insulated shipper for Category A shipments
- (2) Sheets of paper with **red diagonal** hatch marks to print **Shipper's Declaration Form**
- (1) Itemized list of contents card (**be sure to include specimen type quantities** (e.g., 5ml EDTA whole blood tube/qty 2))

Place completed card between the secondary receptacle and outer package

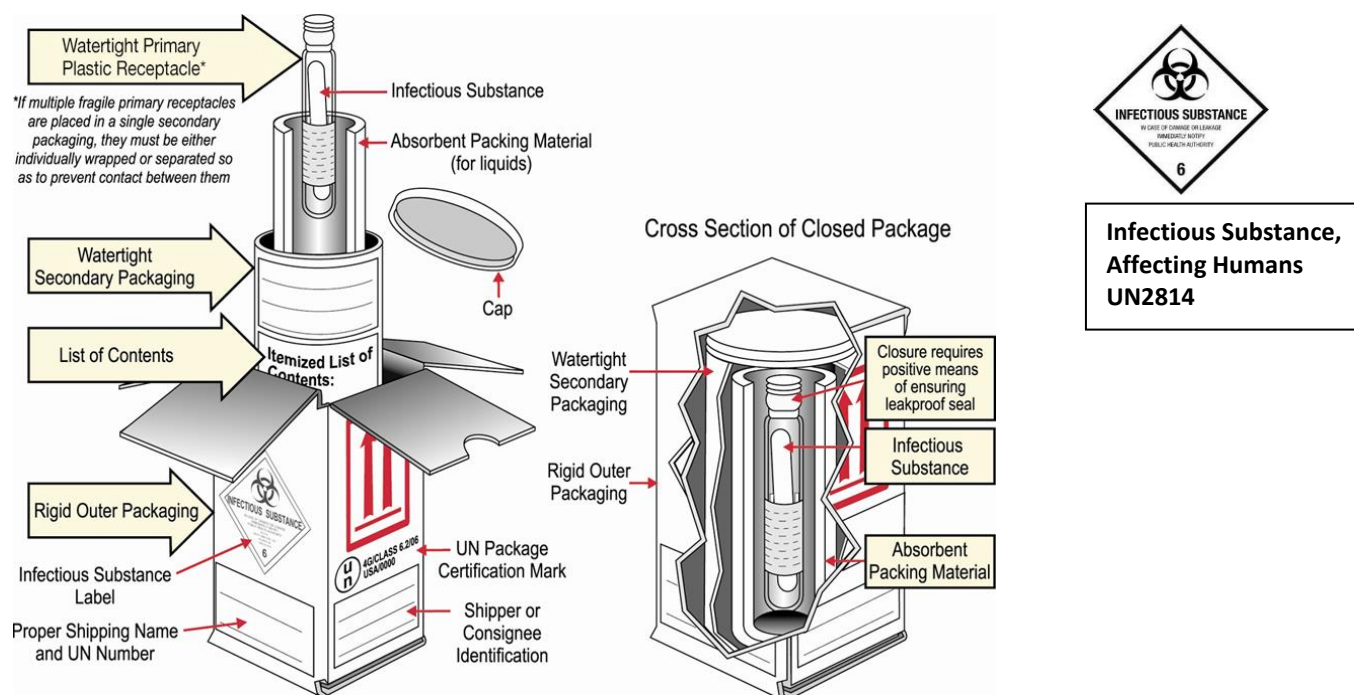
V. SPECIMEN PACKAGING

- Package specimens following the basic TRIPLE PACKAGING SYSTEM (see diagram below):
 - **Primary "shipping" receptacle** - (sealable specimen bag) wrapped with absorbent material)
 - **Secondary "shipping" receptacle** - (watertight, leak-proof, and puncture proof container)
 - **Tertiary "shipping" receptacle** - (rigid outer shipping package)

If multiple primary receptacles will be placed in a single secondary receptacle, they must be individually wrapped or separated to prevent contact between them.

- **DCLS Test Request form should be included inside the package, but outside of the secondary receptacle**
- The shipping receptacle should have the appropriate DOT-approved labeling required for Category A packages

Diagram 1: Triple Packaging System



VI. CONTACT INFORMATION / REFERENCES:

DCLS 24/7 Emergency Number: (804-335-4617)

DCLS Bioterrorism/Special Pathogens Testing Coordinator: Dr. LaToya Griffin-Thomas (804-385-8057)

DCLS Test Request Form: <https://dgs.virginia.gov/globalassets/document-center/dcls-forms/dcls-test-request-form-16857-4.pdf>

DCLS Hot Topics/Updates: <https://dgs.virginia.gov/division-of-consolidated-laboratory-services/updates/hot-topics/>

Shipper's Declaration Forms:

<https://www.iata.org/contentassets/a9f496cd8c87466b98142fa6d4cdb209/shippers-declaration-column-format-fillable.pdf> OR <https://www.fedex.com/content/dam/fedex/us-united-states/services/ShippersDecColumnsColorPrinter.pdf>